ABSTRACT

The present invention concerns a microbial cell comprising a first expressible enzyme activity, e.g. pyridine nucleotidetranshydrogenase from Azotobacter nivelandii which, when expressed in said microbial cell, is controlling an intracellular redox system of said cell, said first expressible enzyme activity in said microbial cell being operably linked to an expression signal not natively associated with said first expressible enzyme activity. The expression of said first expressible enzyme activity is operably linked to an increased production of a first metabolite. The cell is preferably a yeast cell and may also comprise a further expressible enzyme activity, e.g., glutamate synthase and/or glutamine synthetase, said further expressible enzyme activity, when expressed, mediating a first biosynthetic reaction resulting in production of a first metabolite, said further expressible enzyme activity, when expressed at an increased level, resulting in an increased production of said first metabolite being operably linked to an increased expression of said first expressible enzyme activity. The is also provided a microbial cell wherein said expression of said first expressible enzyme activity is operably linked to an increased production of a first metabolite and a decreased production of a second metabolite. Cells according to the invention are useful in the production of a metabolite such as ethanol or glycerol.